

Investigation of the electrophoretic separation of isotopologues,
isotopomers, and their enantiomers using cyclodextrins

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The primary objective of the present work is to develop optimal conditions for the simultaneous separation of isotopologues, isotopomers, and their corresponding enantiomers using capillary electrophoresis. Our study confirmed that at low pH, the separation of isotopologues and isotopomers based solely on charge density is practically impossible. To address this challenge, various chiral selectors were evaluated: unmodified α , β and γ -cyclodextrins, as well as modified derivatives, including sulfated, sulfopropylated, and trimethylammonium β -cyclodextrin.

Preliminary experimental results demonstrated significant progress in terms of resolution. these findings are promising and provide a solid foundation for further method optimization to achieve full baseline separation of all four components.